

Work Order ID 137050

Thursday, September 24, 2015 11:32:36 AM

137050

PRELIMINARY ISSUE

Page 1

Item ID: D5304-1

Revision ID: PRELIM

Item Name: Crossbolt Spacer



Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 9/24/2015 Start Qty: 15.00

15

Cust Item ID:

Required Date: 9/24/2015 Req'd Qty: 15.00

15

Customer:

Reference:

Approvals:

Process Plan: MCS

Date: SEP 24 2015

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D5304

PA2

REV A

100

Hardinge CNC LATHE SMALL

0.00

100

Hardinge

Memo

0.00

Hardinge CNC Lathe Small

1- Machine as per Folio FB

FOLIO REV: N/A

DWG REV: A2

DO NOT CHAMFER OUTSIDE DIA

2- Deburr

17 0 DAS 44 9-29 15/09/29

110

QC2- Inspect parts off machine FAI/FAIB

0.00

110

QC

Memo

0.00

Quality Control

17 0 DAS 44 9-29 15/09/29

Work Order ID 137050

Thursday, September 24, 2015 11:32:36 AM

137050

PRELIMINARY ISSUE

Page 2

Item ID: D5304-1 Accept *N900040100* Setup Start *NS1*
 Revision ID: PRELIM Stop *NS2*
 Item Name: Crossbolt Spacer
 Start Date: 9/24/2015 Start Qty: 15.00 *15* Cust Item ID:
 Required Date: 9/24/2015 Req'd Qty: 15.00 *15* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamps
120	QC8- Inspect parts - second check	0.00							
120									
QC	Memo	0.01							
Quality Control									
130	Outsource process - Heat Treat	0.00							
130									
Outsource1	Memo	45.00							
Outsource process - Heat Treat	***HEAT TREAT AS PER DWG D4202***								
140	Receive & Inspect for Damage & Mat'l Certs	0.00							
140									
Packaging	Memo	0.01							
Packaging									

1.7
 38
 9-29
 SEP 29 2015

CL OCT 2 2015 17

P/O: 29975

D5304

17 D43
 13
 9-29 OCT 15 2015

Thursday, September 24, 2015 11:32:36 AM

137050

PRELIMINARY ISSUE

Page 3

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Item Name: Crossbolt Spacer

Start Date: 9/24/2015 **Start Qty:** 15.00

15

Cust Item ID:

Required Date: 9/24/2015 Req'd Qty: 15.00

15

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Insp.
Stamp

0.00

150

QC

Memo

0.00

Quality Control

DAS
38
9-89
OCT 15 2015

160

0.00

160

HandFinish

Memo

0.00

Hand Finishing

WASH SPACER AS PER OSI005

170

QC5- Inspect part completeness to step on W/O

0.00

170

QC

Memo

0.01

Quality Control

DAS
38
9-89
OCT 19 2015

Work Order ID 137050

Thursday, September 24, 2015 11:32:36 AM

137050

PRELIMINARY ISSUE

Page 4

Item ID: D5304-1 Accept *N900040100* Setup Start *NS1*
 Revision ID: PRELIM Stop *NS2*
 Item Name: Crossbolt Spacer
 Start Date: 9/24/2015 Start Qty: 15.00 *15* Cust Item ID:
 Required Date: 9/24/2015 Req'd Qty: 15.00 *15* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	Identify as per dwg & Stock Location: 16-01 PRELIM	0.00							
100									
Packaging	Memo	0.00							
Packaging	***STOCK IN SKIDTUBE CELL*** LOCATION : LG001								
200	QC21- Final Inspection - Work Order Release	0.00							
200									
QC	Memo	0.03							
Quality Control									

~~17 0 15-10-19~~ DAS 38 9-89
 16 0 17-04-12
 17/4/19
 MWS NOV 12 2015

POSITIVE RECALL

EFFECTIVE SEP 24 2015 AUTH MWS
 RELEASED DAS 0 DATE 17-04-12
 9-89
 ENG 6105 SEPC

Picklist Print

Thursday, September 24, 2015 11:32:39 AM

PRELIMINARY ISSUE

Page 1

Work Order ID: 137050

137050

Parent Item: D5304-1

D5304-1

Parent Item Name: Crossbolt Spacer

Start Date: 9/24/2015

Required Date: 9/24/2015

Start Qty: 15.00

Required Qty: 15.00

Comments: IPP REV:A NEW ISSUE 15-09-24 JLM VERIFIED BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6T0.750W.125		Purchased	No				f	27.9300		6.836842	DAS 44 9-29	15/09/29.	
M6061T6T0 750W 125										**			
6061-T6 RD Tube .750 x .125W													

Location

Loc Qty

Loc Code

MAT

24

✖ m133044

24

MAT015

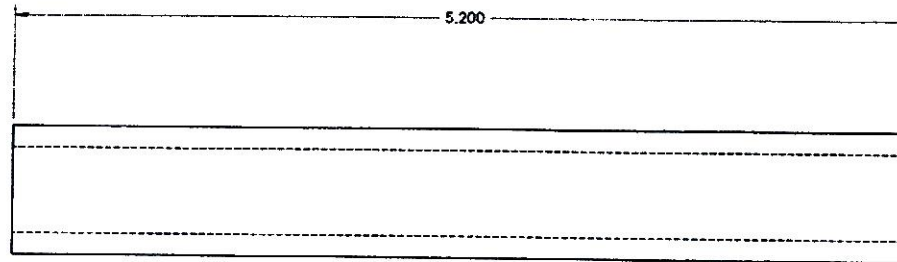
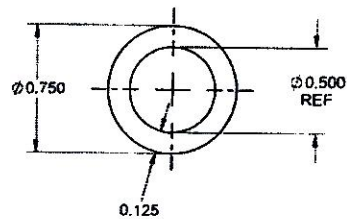
3.93

120918

3.93

81

PRELIMINARY ISSUE



D5304-1 CROSSBOLT SPACER

137050 M15
15-09-24

NOTES:

- 1) MATERIAL: 6061-T4/T42 ALUMINUM TUBING PER WW-T-700/6, AMS 4081, OR ASTM B210/B221/B241
REF DART SPEC M6061T4T0.750W.125
OR
6061-T6/T62-T6510/-T6511 SEAMLESS TUBING PER WW-T-700/6 OR
QQ-A-200/6 OR QQ-A-225/6 OR AMS 4080 OR AMS 4082 OR AMS 4083
OR ASTM B210 OR ASTM B241, REF DART SPEC M6061T6T0.750W.125
HEAT TREAT TO T4-T42 CONDITION, MIN UTS = 30 KSI (60 HREW MIN)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.12 lbs

PRELIMINARY ISSUE

A		NEW ISSUE		AP		15.09.23	
REV.		DESCRIPTION		BY		DATE	
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA					
DRAWN	AP						
CHECKED	DB	DRAWING NO.					REV. A2
MFG. APPR.	JLM	D5304					SHEET 1 OF 1
APPROVED		TITLE					SCALE
DE APPR.		CROSSBOLT SPACER					NTS
DATE	15.09.23	COPYRIGHT © 2015 BY DART AEROSPACE LTD					

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
305573	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
29975		AL-6061		
<u>SPECIFICATIONS DU PROCÉDÉ</u> processing specifications				
SOL ANNEAL SINGLE AGING TO CONDITION T42				
EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results	
CONDUCT	36 - 44 %IACS	87 (60 kHz)	37.75 - 38.75 %IACS	
HARDNESS		87	64.5 - 68 HREW DURETE MESUREE EN HR15TW = 65-67 HR15TW	
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
433	16	D4202-1 (401) D4202-1 136610 (17) D5304-1 137050 (15) ENG. TESTING 137397 1 BC = 4 SACS		

COMMENTAIRES / comments

SOL, ANNEAL 529C, 35 MIN
AGE HARDEN AMBIANT, 96 HRS

Heat treatment (HT) was performed with equipment that meets the requirements of requested specification. All HT operations were performed in compliance with the required HT specification and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with the material specification and the purchase order and was found to meet the requirements.

Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec la spécification demandée. Toutes les opérations de TT ont été faites en conformité avec les requis de la spécification demandée et toutes les vérifications et les tests demandés ont été faites et documentés. Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué échantillonné testé et inspecté en accord avec les spécifications du matériel et le bon

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
305573	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

Certifier que le matériel a été fabriqué, conformément, testé et inspecté en accord avec les spécifications du matériel et le bon de commande et le matériel rencontre les exigences spécifiées.

APPROUVÉ par / Approved by:

Isabel Otero
Isabel Otero
QA Technician

DATE: 2015-10-14



DART
AEROSPACE

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO29975**

Purchase Order Date 10/2/2015

PO Print Date 10/2/2015

Page Number 2 of 3

Order From :

VC-MET004

Ship To : DART AEROSPACE LTD

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 450 473 1884

Ship To Contact

Ship To Phone

Ship Via:

Ship Acct:

FedEx Overnight collect

Buyer

Chantal Lavoie

Customer POID

Customer Tax # 10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

3	137050	D5304-1 SPACER'	10/16/2015	17.00	\$0.00	\$0.00
			Yes			
			10/16/2015			

HEAT TREAT TO T4/T42 CONDITION
MIN. UTS=30 KSI (60 HREW MIN)
NOTE: DETAIL C OF C REQUIRED

PART ARE MADE FROM 6061-T6 MATERIAL

Line Total: \$0.00

4	137397	ENG. TESTING	10/16/2015	15.00	\$0.00	\$0.00
			Yes			
			10/16/2015			

HEAT TREAT TO T4/T42 CONDITION
MIN. UTS=30 KSI (60 HREW MIN)
NOTE: DETAIL C OF C REQUIRED

PART ARE MADE FROM 6061-T6 MATERIAL

Line Total: \$0.00

Note:

10/2/2015

Purchase Order Receipt Listing

Thursday, August 27, 2015 10:57:21 AM

Page 1 of 1

All amounts are calculated in domestic currency.

All Vendors PO ID PO29524 Receipt Dates from 8/27/2015 to 8/27/2015 All Line Item Types

All Item ID/GL/WOs All Rec. Employees All Currencies

Grouped by Vendor ID

Purchase Order ID/ Curr Type	Line Nbr/ Insp Req	Project ID	Reference/ Description/ Cert Std	PO U/M / Stock U/M	Required Date Required Qty	Recv Date/ Recv Emp	Recv Qty (PO U/M)	Cost Per Unit/ Recv Value	Inspected Qty/ Rejected Qty (PO U/M)	MRB Qty/ MRB Reject Qty	Book Amt
VendorID/Vendor Name		VU-TWM001	TW Metals								
PO29524	3		M6061T6T0.750W.1 f 25		8/27/2015	8/27/2015	24.0000	\$9.20	0.0000	0	\$220.80
USD	No		6061-T6 RD Tube f .750 x .125W m133044		24.0000	DCUSER		\$220.80	0.0000	0	
	4		71401-45		8/27/2015	8/27/2015	1.0000	\$0.00	0.0000	0	\$0.00
	No		PROCUREMENT QUALITY CLAUSES m133044		1.0000	DCUSER		\$0.00	0.0000	0	
Total Received Quantity:											25.0000
Total Qty to Inspect (PO U/M):											0.0000
Total Reject Quantity:											0.0000
Total Receipt Value:											\$220.80
Total Balance Due Quantity:											0.0000



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO29524

Purchase Order Date 8/19/2015

PO Print Date 8/19/2015

Page Number 2 of 2

Order From :

TW METALS
PO BOX 933014
ALTANTA, GA 31193-3014
US

VU-TWM001

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 585 768 5600

Ship To Contact

Ship To Phone

Ship Via:

YRC COLLECT

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax # 10127-2607

Terms

Net 30

Currency

USD

FOB

FCA -- (Free Carrier)

QTY	DESCRIPTION	UNIT	DATE	PRICE	TAX	TOTAL
3	M6061T6T0.750W.125	6061-T6 RD Tube .750 x .125W	8/27/2015	24.00	\$9.20	\$220.80

Yes

8/27/2015

MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING
AS PER WW-T-700/6 OR QQ-A-200/8 OR QQ-A-225/8 OR
AMS 4080 OR AMS 4082 OR AMS 4083 OR ASTM B210 OR
ASTM B241

Line Total:

\$220.80

4 71401-45

PROCUREMENT
QUALITY CLAUSES

8/27/2015

No

8/27/2015

Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

Line Total:

\$0.00

PO Total:

\$726.00

Note: Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Change Nbr: 1

Change Date: 8/19/2015



METALS
Of Heat High Performance
 Metals Group



PACKING SLIP

ORDER NO.: 03344287

FROM: CINC

PAGE 1

CUST NUMBER: 1203820 NET WGT:
 SOLD TO:
 DART AEROSPACE LTD
 1270 ABERDEEN ST
 HAWKESBURY ON
 CANADA

CN K6A 1K7

6.926 REQ.DATE: 08/27/15 CONFIRMED
 SHIP TO:
 DART AEROSPACE LTD
 1270 ABERDEEN ST
 HAWKESBURY ON
 ONTARIO CANADA

CN K6A 1K7

SALESPERSON: DONNA SMALLEY
 TERMS: NET 30 DAYS
 F.O.B.: SHIPPING POINT
 CUST ORD NO.: PO29524 IT 3

SHIP BY: 08/21/15
 VIA: COMMON CARRIER
 FREIGHT: PREPAID
 RELEASE NO.:
 RECEIVING PHONE:

LINE ITEM DESCRIPTION

0001 42891 D6061-T6 3/4 OD X .125 WA

WIDTH

LENGTH

12 FT ML

ORD QTY

24.000 FT

INVOICE QTY

24.000 FT

SHIPPED QTY

24.000 FT

WT

6.926

PCS

2

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: EAR99

Export License: NLR

Expiration Date: 0/00/00

PO:49304300 HT:19714262

PC: 2

CUSTOMER QTY:

UOM

MLT:

MFG:UNITED STATES

SLB/CL:1000542011

BROKERS KUEHNE  NAGEL LTD

AREA	TYPE OF PKG	PKGS	GRS WEIGHT	WIDTH	LENGTH	HGHT
DOCK	TUBE WITH BOARD	1.000	45.000	7.0000	148.0000	6

1.000

45.000

BY: TH

RT 000-

UNLOAD TYPE: NONE SPECIFIED

DATE SHIPPED _____

DATE FILLED _____

THANK YOU FOR THIS ORDER

TERMS AND CONDITIONS APPLICABLE TO THE SALE
 OF THESE PRODUCTS ARE SET FORTH ON THE
 REVERSE SIDE FOR YOUR CAREFUL REVIEW.

Alcoa Forgings and Extrusions
Lafayette Operations
3131 East Main Street
Lafayette, IN 47905-7500
ALCOA
Alcoa, Inc.

Invoice To Customer
TW METALS INC
THE ARBORVIEW SUITE 204
760 CONSTITUTION DR
EXTON, PA - 19341
Ship To Customer
TW METALS INC
235 W. TUBBWAY
CAROL STREAM, IL - 60188

Certified Inspection Report

Sales Order Number	1000542011		Customer P/O	49304300-001 / ITEM 42891	23-JAN-14	Cert Number	AET1663581	Page	1/2	Cert Print Date	23-JAN-14
	Line	No.									

Quantity Shipped	Date Shipped	Item No.	Item No. Rev	Delivery ID	Customer Part No	Notes
834	23-JAN-14	03346681		2131796	9025671	Drawn Tube OD x WALL 0.750 OD x 0.125 WALL ITEM LN 661/16 W/F 0.289 Marking CONTINUOUS: Oiling NO AMS4082 REV P AMS W-W-F 200/6 REV B ASTMB210 REV 12 CP49-74.2.005 REV 8 W-W-T-700/6 REV F, AM2, NOT! A59100 REV C MMS1440 REV A

The material for this order was melted and manufactured in USA.
COMPOSITION NOTE: The values for 'Others Each' and 'Others Total' have met the limits as shown on this certified inspection report. Remainder is Aluminum.

Legal Statement
We hereby certify that, unless otherwise indicated, the material covered by this report has been manufactured, inspected, and tested in accordance with, and has been found to meet, the applicable requirements described herein, including any specifications forming a part of the description and that samples representative of the material met the normal composition and had the mechanical properties shown on the face of this certification. Also, note that mercury is not a product. This certification is not to be reproduced in partial form without prior written approval of our Quality Assurance Dept.

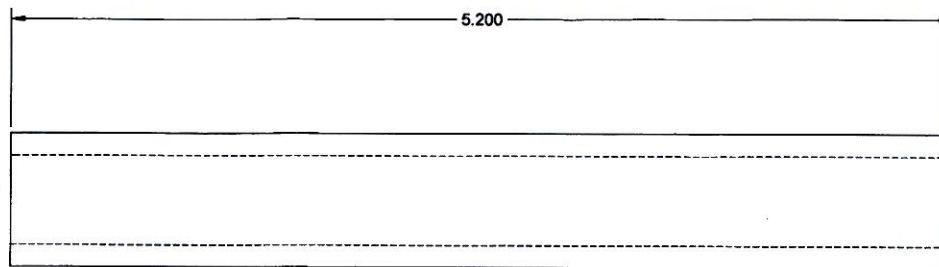
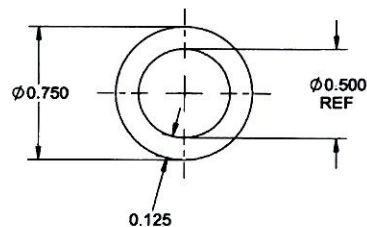
Signature And Title
Melissa Griffith
Melissa Griffith
Quality Control Manager

TW METALS
JAN 24 2014
ACCEPTED BYS
TWOUMER

Quantities per Lot / Packages									
Package Number	Lot Number	Quantity	UOM	Gross Weight	Net Weight	Alloy	Wt %	Min	Max
G17-PKG646879	19714262	80	PCS	288	278	Fe	0.15	0.40	0.8
G17-PKG646880	19714262	80	PCS	288	278	Cu	0.15	0.8	0.15
G17-PKG646884	19714262	80	PCS	288	278	Mn	0.05	0.9	0.06
						Cr	0.06	0.06	0.02
						Zn	0.06	0.06	0.02
						Ti	0.15	---	---
Composition Results									
Alloy	Wt %	Others Each	Min	Max	6061				
6061	0.05	---	---	---	---				
Others Total									
0.15									

ACCEPTED BYS		TEST	
JAN 24 2014		THOMSON	

Composition Results									
Heat / Cast / Lot Number	7021-L2	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
0.6	0.21	0.24	0.05	0.9	0.06	0.06	0.06	0.06	0.02



D5304-1 CROSSBOLT SPACER

NOTES:

- 1) MATERIAL: 6061-T4/T42 SEAMLESS ALUMINUM TUBING PER WW-T-700/6, AMS 4081, OR ASTM B210/B221/B241
REF DART SPEC M6061T4T0.750W.125
OR
6061-T6/T62/T6510/T6511 SEAMLESS TUBING PER WW-T-700/6 OR
QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 4082 OR AMS 4083
OR ASTM B210 OR ASTM B241. REF DART SPEC M6061T6T0.750W.125
HEAT TREAT TO T4/T42 CONDITION. MIN UTS = 30 KSI (60 HREW MIN)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.05 lbs

RELEASED
2016-02-04
ECN 16-514

APPROVED

A	NEW ISSUE			AP	15.11.02
REV.		DESCRIPTION	BY	DATE	
DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR DRAWING NO. D5304 TITLE CROSSBOLT SPACER		REV. A	
DRAWN	AP			SHEET 1 OF 1	
CHECKED	AJS			SCALE	
MFG. APPR.	JLM			NTS	
APPROVED	WM				
DE APPR.	DS				
DATE	15.11.02				
COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.					